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CLASSIFICATION CHANGED TO UNCLASSIFIED

LIST NO. 117

The following National Advisory Committee for Aeronautics Reports have been "Declassified" per authority of WADC Reclassification List No. 9 dated 20 December 1956.

Date DATE: 11 JANUARY 1957

Signed Richard E. Reedy
OFFICE SECURITY ADVISOR

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4. The enclosed program, proposed by the Langley 19-foot pressure tunnel staff, differs from that of the contractor in the following respects:

(a) Inasmuch as the contractor now agrees (reference (b)) with the conclusions of reference (a), that direct control for this airplane is impractical, no tests of direct-control configurations will be made, except insofar as necessary to provide information for determining the method of correcting the upfloting tendency of the airplane.

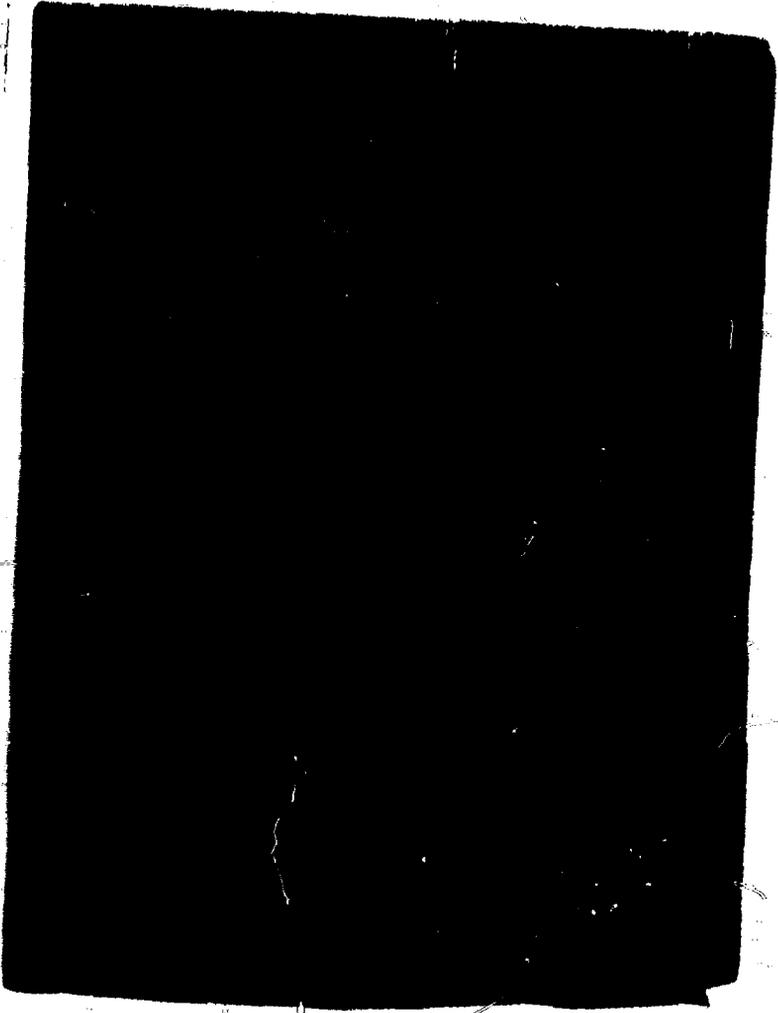
(b) Detailed tests of the direct-control system will be made only if the direct-control configuration to be employed on the airplane.

5. The spoiler-airflow investigation, as presented (Part IV) in the attached program, is incomplete. Since each of the programs of the conventional airplane preceding this investigation is contingent on the results of the tests as they proceed, it is not considered advisable to detail this investigation at the present time. In addition, it may be necessary to interrupt the spoiler-airflow investigation to insure that the detailed program of the direct-control system will be completed in the allotted time.

Ann A. Sawyer, Jr.
Acting Engineer-in-Chief

Enc. Test Program
(7, tests)

1. Direct Control
2. Spoiler Airflow
3. Direct Control
4. Spoiler Airflow
5. Direct Control
6. Spoiler Airflow
7. Direct Control



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TOP SECRET

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...
for $\theta_1 = 0^\circ, \theta_2 = 0^\circ, \theta_3 = 0^\circ, \theta_4 = 0^\circ, \theta_5 = 0^\circ, \theta_6 = 0^\circ, \theta_7 = 0^\circ, \theta_8 = 0^\circ, \theta_9 = 0^\circ, \theta_{10} = 0^\circ$
for $\theta_1 = 0^\circ, \theta_2 = 0^\circ, \theta_3 = 0^\circ, \theta_4 = 0^\circ, \theta_5 = 0^\circ, \theta_6 = 0^\circ, \theta_7 = 0^\circ, \theta_8 = 0^\circ, \theta_9 = 0^\circ, \theta_{10} = 0^\circ$
for $\theta_1 = 0^\circ, \theta_2 = 0^\circ, \theta_3 = 0^\circ, \theta_4 = 0^\circ, \theta_5 = 0^\circ, \theta_6 = 0^\circ, \theta_7 = 0^\circ, \theta_8 = 0^\circ, \theta_9 = 0^\circ, \theta_{10} = 0^\circ$

The above and the application to be tested here will be determined on the basis of tests in 1. as well as the results of the tests in 2. as well as the results of the tests in 3. and 4. are being conducted.

1. Standard slot punch, single-slotted flap 10° .
a. serve tab $0^\circ, 25^\circ, 50^\circ, 75^\circ, 100^\circ$
2. Standard slot punch, double-slotted flap 10° .
a. serve tab 0° .
(Note: the conditions under which 0° will be tested only if a large change in the direction of the slot occurs serve tab 0° , results from reflection of the flap.)
3. Standard slot punch, single-slotted flap 10° , transition flap at head of page.
a. serve tab 0° .
4. Standard slot punch, single-slotted flap 10° , serve tab sealed.
a. serve tab $0^\circ, 25^\circ, 50^\circ$.
5. Standard slot punch, single-slotted flap 10° .
a. serve tab $0^\circ, 25^\circ, 50^\circ, 75^\circ, 100^\circ$.
6. Standard slot punch, double-slotted flap 10° , single-slotted flap 10° and 10° .
a. serve tab 0° .
(Note: the conditions other than 0° will be tested only if a large change in the direction of the slot occurs, serve tab 0° , results from reflection of the flap.)
7. Standard slot punch, single-slotted flap 10° , transition flap at head of page.
a. serve tab 0° .
8. Standard slot punch, single-slotted flap 10° , serve tab sealed.
a. serve tab $0^\circ, 25^\circ, 50^\circ$.
(This condition will be tested only if a large change in the direction of the slot occurs, results from reflection of the flap.)

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III. The procedures, scale (root, tail angles).

Tip effect towards and shall radius $r = 100$.

Scale effect $q = 30, 60, 100$.

IV. 40° through various lifts.

Lower lip extension, extended, except as noted.

A. Side effect and shall studies.

1. Standard side closed.

a. Flaps 50°

b. Single-slotted flaps 40°

c. Double-slotted flaps 10°

2. Standard side open.

a. Flaps 50°

b. Single-slotted flaps $20^\circ, 40^\circ$

c. Double-slotted flaps $30^\circ, 50^\circ, \text{ and } 70^\circ$

3. Side: 40° configuration (same in accordance with

the final configuration)

c. Full-span double-slotted flaps $50^\circ, 20^\circ$

and 70°

B. The effect studies.

1. Standard side open.

a. Single-slotted flaps 40° and 70° .

2. Single configuration (same in accordance

with the final configuration).

a. Full-span flaps $20^\circ, 40^\circ, \text{ and } 70^\circ$.

3. Standard side open lower lip extension not

shown.

a. Single-slotted flaps $20^\circ, 30^\circ, 40^\circ, 50^\circ,$

and 70° .

IV. Single: three curved configurations

$q = 30, 60, 100$

$\alpha = 0^\circ, -10^\circ, -20^\circ, -30^\circ, -40^\circ, -50^\circ, -60^\circ$

V. The following studies, no configurations, no vent,

no boundary layer effect.

1. Flaps 50°

a. Configurations of upper and side airfoil

configurations to be detailed later.

2. With particular studies (but standard segments

detached) no vent, no boundary layer effect.

1. Flaps 50°

a. Configurations of upper and side airfoil

configurations to be detailed later.

If these data are sufficient to indicate the

possibility of obtaining the standard segments ahead

of the airfoil, the position of the upper inverted

section will be selected with these segments detached.

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If these tests are not conclusive, they will be repeated at three 30% and the decision will then be made.

This includes the following species, no vent, no perforations, no secondary layers also.

In particular, species 2 percent vent, no perforations, no secondary layers also.

In particular, species 2 percent vent, no perforations, no secondary layers also.

In particular, species 2 percent vent, no perforations, no secondary layers also.

In particular, species 2 percent vent, no perforations, no secondary layers also.

In particular, species 2 percent vent, no perforations, no secondary layers also.

When the tests of the 2 percent vent show a definite improvement over the 1 percent vent, the first preferred assignment on this 2 percent vent will not be 100000.

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PREPARED BY
CHECKED BY
REVISED BY

Consolidated Vultee Aircraft Corporation
FORT WORTH DIVISION
FORT WORTH, TEXAS

REPORT NO.
MODEL
PAGE

TEST PROGRAM

4-ENGINE HIGH SPEED SPAN XB-36 BIRD MODEL
WIND TUNNEL - LANGLEY FIELD

General Scope of Tests

1. Drag effect and stall studies (sketches and motion pictures)
2. Flap effectiveness
3. Aileron effectiveness and hinge moments
4. Tab effectiveness and hinge moments
5. Spoiler effectiveness and hinge moments

Detailed Test Program

I. Drag Effect and Stall Studies

A. Full Span

1. Single slotted flaps $0^\circ, 10^\circ, 20^\circ$
2. Double slotted flaps $0^\circ, 10^\circ, 20^\circ$

B. Aileron Slotted

1. Single slotted flaps $0^\circ, 20^\circ$
2. Double slotted flaps 20°

3. Full span double slotted flaps $0^\circ, 20^\circ, 40^\circ, 60^\circ, 80^\circ$
(top flap vent 1/2)

II. Aileron Effectiveness

- A. Single slotted flaps $0^\circ, 20^\circ, 40^\circ$
- B. Double slotted flaps $20^\circ, 20^\circ, 40^\circ, 40^\circ, 40^\circ$
- C. Double slotted flaps less lower lip extension $20^\circ, 20^\circ$
- D. Full span double slotted flaps $20^\circ, 20^\circ, 40^\circ, 40^\circ, 40^\circ$

TEST PROGRAM (cont'd)

III. Aileron and Tab Mechanisms and Flaps (cont'd)

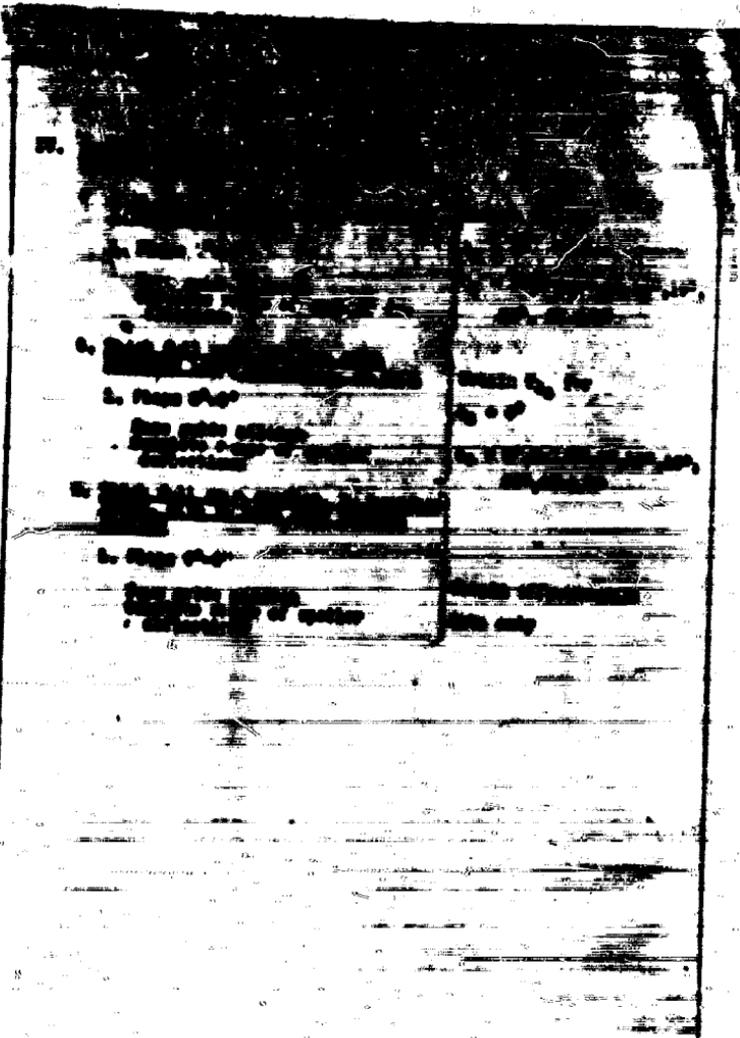
C. Swept trailing edge ailerons and tabs

- 1. Small trailing edge bevel
 - (a) Slots closed
 - (1) Single slotted flap 0°
 - (b) Slots open
 - (1) Single slotted flap 0°
- 2. Large trailing edge bevel
 - (a) Slots closed
 - (1) Single slotted flap 0°
 - (b) Slots open
 - (1) Single slotted flap 0°

IV. Section Two Center Line Wing Section Aileron Flaps

A. This section was section on center line wing section

- 1. Flaps $0^\circ-0^\circ$
Complete range of aileron and guide aileron deflections
- 2. Flaps $0^\circ-0^\circ$
Complete range of aileron and guide aileron deflections
- 3. Flaps $0^\circ-0^\circ$
Complete range of aileron and guide aileron deflections
- 4. Flaps $0^\circ-0^\circ$
Complete range of aileron and guide aileron deflections



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CONFIDENTIAL <i>over</i>						ATI- 16809
TITLE: Conference to Determine the Test Program for the 4/29-Scale Hemispan Model of the Consolidated Vultee XB-36 Airplane in the 19-Foot Pressure Tunnel						REVISION: (None)
AUTHOR(S): (Not known)						ORIG. AGENCY NO.: (None)
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ABSTRACT:						
<p>A discussion is presented on a test program for the XB-36 bomber including scale effect and stall studies, flap effectiveness and the servo tab method of aileron control. These parts of the program were agreed to be satisfactory. A possible revision of the balancing tab study was considered, but limited to a study of the effect of tab bulbs in eliminating the undesirable aileron floating tendency. In connection with spoiler tests the desirability of placing all spoiler segments on the same shaft was stressed.</p>						
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(25) XB-36 aircraft
 * Bomber aircraft
 (23) * Wind tunnel tests